

<b>Brookhaven National Laboratory</b> <b>National Synchrotron Light Source</b>		<b>Number:</b> LS-PPS-0006	<b>Revision:</b> C
		<b>Effective:</b> 7/8/03	<b>Page 1 of 4</b>
<b>Subject: <u>X17C</u> Radiological Interlock Test</b>			
<b>Prepared/</b> M. Buckley		<b>Approved By:</b> S. Buda	
<b>Approved By:</b>			

\*Approval signatures on file with master copy.

[Revision/Periodic Review Log](#)

Test Reason:	Test Result: <input type="checkbox"/> Passed <input type="checkbox"/> Failed	
	Test Type: <input type="checkbox"/> Full <input type="checkbox"/> Partial	
Test Date:	Start Time:	Finish Time:
Tester 1:	Assistant 1:	
Tester 2:	Assistant 2:	

#### PREPARATION:

Inform control room operator that test will be done.

Turn off 'Red Tag' switch on x-ray ring interlock, and red tag it.

Verify that vacuum valves and water interlocks are satisfied on X17C, or jumper user interlock.

#### 1. Search the hutch

The overhead lights go out \_\_\_\_\_  
The red interior light comes on \_\_\_\_\_  
The audible alarm sounds for 13 to 15 seconds minimum \_\_\_\_\_  
The hutch interlock sign turns on \_\_\_\_\_

#### 2. Open hutch door

The hutch interlock sign goes out \_\_\_\_\_

#### 3. Press CS-1, close hutch door and wait.

Hutch interior lights come on in not more than 20 seconds \_\_\_\_\_

Press CS-E.

Interlock does not activate \_\_\_\_\_

#### 4. Press interior search button, close door, press CS-E, note that alarm comes on, open and close door, press CS-E again. (This must all be done in less than the timeout interval noted in step 3).

Interlock does not activate \_\_\_\_\_

#### 5. Secure Transport Hutch. Search X17C hutch, one person remains inside.

The STRESS "enable" light does not come on until the  
end of the warning interval \_\_\_\_\_

#### 6. The person inside presses an Emergency Stop Button.

	<b>ES1</b>	<b>ES2</b>
The shutter "enable" light goes out	_____	_____
The ES indicator comes on	_____	_____
The ES latch cannot be reset unless the SOR key is turned	_____	_____

<b>X17C Radiological Interlock Test</b>			
<b>Number:</b> LS-PPS-0006	<b>Revision:</b> C	<b>Effective:</b> 7/8/03	<b>Page 2 of 4</b>

7. Place latch device on door lock so key can be removed. Place switch holders on door switches. Search hutch, put door key in SRU, open STRESS and BLISS. (Note: One button controls the operation for both shutters on the beamline control panel. The STRESS is physically located upstream near the front end and the BLISS is located inside the transport hutch).

The "Beam ON" sign comes on

Remove holder from switch 2.

RIB latch light comes on

8. Replace holder on switch 2.

RIB cannot be reset unless SOR key is turned.

9. Remove holder on switch 1.

STRESS closes

BLISS closes

RIA latch light comes on

Hutch interlock drops out

RIA can't be reset w/o SOR

10. Replace holder on switch 1. Search hutch, leave shutter closed.

Hutch Kirk key (KKH) cannot be removed from SRU unless button is pushed

11. Open shutters.

KKH cannot be removed even if button is pushed

12. Close shutters. Turn KKH and note where solenoid unit stops rotation. Push the button and turn key just beyond this point, but not far enough to actuate "key removed" switch. Release the button and leave key in this position. Open shutters, remove KKH, and replace.

RIA latch light comes on

RIB latch light comes on

The STRESS closes

The BLISS closes

13. With hutch interlocked, leave shutters closed.

Beamline transfer key cannot be removed from SRU unless button is pushed

Open Shutters.

Beam line transfer key cannot be removed even if button is pushed

14. Close shutters. "Cheat" SRU as described in step 12. Open shutters, remove the key, and replace.

RIA latch light comes on

RIB latch light comes on

The STRESS closes

The BLISS closes

SPA comes on

SPA cannot be reset w/o SOR

**Door**

**#1**

**#2**

<b>X17C Radiological Interlock Test</b>			
<b>Number:</b> LS-PPS-0006	<b>Revision:</b> C	<b>Effective:</b> 7/8/03	<b>Page 3 of 4</b>

15. Reset RIA and RIB. Open STRESS shutter, and press an emergency stop button.
  - RIA latch light comes on \_\_\_\_\_
  - RIB latch light comes on \_\_\_\_\_
  - Hutch interlock drops out \_\_\_\_\_
  - STRESS closes \_\_\_\_\_
  - BLISS closes \_\_\_\_\_

Reset RIA, RIB and ES. Search hutch.
16. Open STRESS "C" by pressing and holding the button on the air solenoid. BLISS remains closed.
  - Remove holder on switch 2 and replace
  - RIB trips \_\_\_\_\_
  - Reset RIB, release switch 1
  - RIA trips \_\_\_\_\_
  - Close STRESS "C".
17. Search hutch. Turn off air to STRESS "C" on the solenoid bank. Cycle shutter open & closed until the STRESS remains closed when open button is pressed. Open BLISS.
  - Remove holder on switch 2 and replace
  - RIB trips \_\_\_\_\_
  - Reset RIB, release switch 1
  - RIA trips \_\_\_\_\_
  - BLISS Closes \_\_\_\_\_
  - Open air valve to solenoid bank.
  - Search hutch.
18. Open shutters. Remove the Control Room Shutter Enable Key for X17C, then replace the key.
  - STRESS & BLISS close \_\_\_\_\_
  - RIA trips \_\_\_\_\_
  - The "Control Room Inhibit" light comes on \_\_\_\_\_
  - The SPA latch comes on (after the key is back on) \_\_\_\_\_
  - STRESS cannot be opened \_\_\_\_\_

Reset RIA and SPA
19. Turn "Auto Open" key to ON. At the Control Room, switch the Shutter Master Enable to "Inhibit" and back to "Enable".
  - STRESS & BLISS close \_\_\_\_\_
  - And then re-open \_\_\_\_\_

Turn Auto Open key OFF. Switch the Shutter Master Enable to "Inhibit" and back to "Enable".

  - STRESS & BLISS close \_\_\_\_\_
  - And does not re-open \_\_\_\_\_

<b>X17C Radiological Interlock Test</b>			
<b>Number:</b> LS-PPS-0006	<b>Revision:</b> C	<b>Effective:</b> 7/8/03	<b>Page 4 of 4</b>

20. One person goes to the x-ray equipment area and observes the indicators for RIAX and RIBX.  
Open STRESS and BLISS.

Remove switch holder from door switch number 2.

RIB latch light comes on \_\_\_\_\_

RIBX trips \_\_\_\_\_

Replace switch holder. Attempt to reset RIBX.

RIBX will not reset \_\_\_\_\_

Reset RIB

RIBX resets \_\_\_\_\_

21. Remove holder from door switch 1.

RIA latch light comes on \_\_\_\_\_

RIAX trips \_\_\_\_\_

Attempt to reset RIAX

RIAX will not reset \_\_\_\_\_

Reset RIA

RIAX resets \_\_\_\_\_

22. Remove the holders from the switches. Remove the latch device from the lock.  
Stand inside the hutch and open and close the door.

Both door switches operate freely and each  
"clicks" when door is opened \_\_\_\_\_

\* \* \*